Asymptomatic congenital subglottic stenosis in a neonate – infant feeding tube as a "Guardian angel!"

Sir,

Unanticipated difficult airway and absence of guidelines for its management in neonates is a piquant situation for an anesthetist.[1,2]

Presentation of congenital subglottic stenosis (SGS) in neonates may vary from asymptomatic to frank stridor.[3] We present rescue airway management of a 2-day-old newborn who presented with intestinal obstruction secondary to high anorectal malformation.

A 2-day-old full-term male neonate weighing 2.5 kg who had an uneventful vaginal delivery, was listed for exploratory laparotomy. Antenatal history of the mother was inconspicuous. The routine evaluation was unremarkable.

Standard protocols for anesthesia care were followed. Rapid sequence induction was done using iintravenous thiopentone (5 mg/kg) and succinylcholine (2 mg/kg). Intubation attempts using Millers blade (size 0) with endotracheal tube (ETT) of size 3, 2.5, and 2 mm internal diameter (ID) failed as none of them could be negotiated beyond the subglottic area. Gentle bag and mask ventilation was initiated, and depth of anesthesia was maintained. Facing nonavailability of the pediatric fiberoptic bronchoscope and ear-nose-throat (ENT) specialist, we prepared a modified smaller ETT with a 6 French gauge (Fr) sized infant feeding tube (IFT) whose length was reduced to 10 cm [Figure 1]. The proximal end of the IFT was attached to a 3 mm ET tube connector [Figure 2a]. A stylette obtained from hydrocephalus shunt system [Figure 1] was used to aid intubation. Intubation was successful in the first attempt and with the presence of adequate air leak, the tube was secured at 6 cm [Figure 2b]. Anesthesia was maintained on sevoflurane, O_2 and air with FiO_2 of 0.5.

No intra-operative complication was observed during the surgery which lasted for 45 min. At the end of surgery, adequate airway patency was revealed by application of positive pressure with a closed circuit pressurized to 25 cm of H_2O. The baby was reversed and extubated in the presence of an ENT surgeon. The postoperative course was uneventful. Subsequently, the baby was diagnosed with Grade II SGS on rigid bronchoscopy and was managed accordingly.

SGS is characterized by subglottic diameter <4 mm in term newborn and <3.5 mm in preterm neonates.[4] Congenital SGS may be asymptomatic, and infants may not present for treatment for weeks after birth.[5] SGS can be suspected on the basis of gestational age, antenatal history of polyhydramnios, previous intubation, other congenital disorders or history of recurrent URTI.[6]

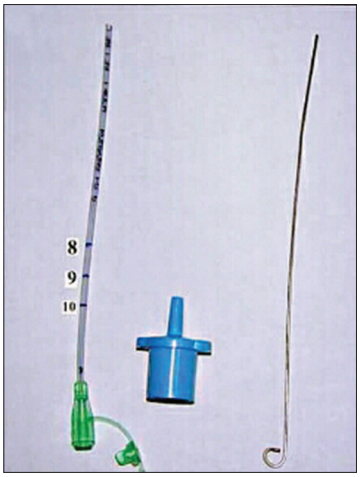

Figure 1: Components of modified endotracheal tube

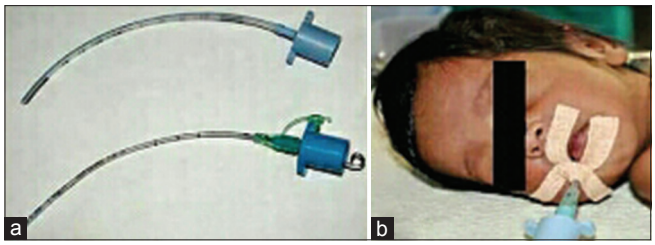

Figure 2: (a) Modified infant feeding tube in comparison to endotracheal tube (size 2). (b) Modified infant feeding tube fixed at 6 cm

The outer diameter (OD), which is 0.9–1.1 mm more than the ID of ETT and is the actual determinant of the space occupied in the larynx, is often overlooked. As tubes smaller than 2 mm ID are not easily available, an emergent innovation was employed. The OD of a 2 mm ETT is approximately 3 mm or 9 Fr which justifies our use of 6 Fr IFT (OD = 2 mm). The length of the ETT was kept short to minimize the airway resistance.[7]

A "full stomach" scenario precluded the use of laryngeal mask airway. Use of suction catheters and jet ventilation has its own disadvantages in neonates (barotrauma and pneumothorax).[8,9]

In such scenarios, all methods of tracheal intubation should be exhausted before considering the front of neck access techniques or tracheostomy which is challenging in small children and should be performed by ENT specialist.[10]

Presence of good leak around a tube with a pressure of 20–25 cm of H_2O was suggested to be a good predictor of absence of significant SGS.[11,12] We suggest that a modified ETT such as the one described in this case, be kept in the emergency airway tray to deal with asymptomatic subglottic stenosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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